

PACKAGING, PARTICULARLY A PALLETIZABLE PACKAGING, A PALLET
CARRYING IT AND THEIR METHODS OF MANUFACTURE

5 The invention relates to a novel box, in particular a
palletizable packaging, to the pallet comprising this
packaging, and to their methods of manufacture.

Various types of packaging are known such as primary packages
10 contained in other packages called secondary packages. It is
known, for example, to pack a cardboard box (secondary
package) with units (primary package) such as pouches, in
particular flexible pouches of the uniformly flat type, also
referred to as three-sided or four-sided sealed pouches
15 (pillow pouch), or of the "doypack" type.

This secondary package (box) is placed on the shelf directly
and sold with the primary packages (pouches) inside it. A
package is thus obtained called a "multi-pack" which can hold
20 a single variety or multiple varieties, the different pouches
containing different products.

This type of packaging poses a number of problems.

25 The first problem is the problem of palletization. Two
standards are at present applied in the trade. In the first
case, the characteristic dimensions of the pallet are 800 x
1200 mm, whereas in the second case the characteristic
dimensions are 1000 x 1200 mm.

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The number of pouches per box varies greatly, depending on the
type of product and on how the latter is marketed. It is
possible to have 7 pouches per box for a 1 pouch per day use.
The number of pouches can also vary for the same product, for
35 example during sales promotions (with 2 extra pouches free).

In the prior art, the pouches are arranged vertically in the box. Thus, the width of the box is imposed by the dimensions of the pouches, which dimensions are chosen to be unique. The height of the box is likewise imposed. However, the length of the box varies depending on the number of pouches in it (the "case count"). Problems are therefore bound to be encountered with this type of box in terms of optimizing the pallet configuration since a box of variable length cannot optimize the occupation of the surface of the pallet for different "case counts". The distribution or organization of the boxes in layers on the pallet has to be modified when this "case count" is modified.

The second problem encountered is the manufacture of such boxes. They conventionally comprise side walls, a base and a lid, the base being integral with the side walls, whereas the lid can be added. For the manufacture of such boxes, use is made of a mandrel (metal preform) which shapes the material of the box by folding in a cavity. The cavity and the mandrel have, as characteristic dimensions, the width and length of the box. Thus, when the length of the box changes, it is also necessary to change the manufacturing tool. This increases the manufacturing difficulties and the final cost.

The invention therefore relates to a secondary package which contains a plurality of flexible primary packages or pouches and which permits maximum occupation of the surface of the pallet and is easy to manufacture, irrespective of the number and type of pouches.

The invention thus makes available a pallet comprising a plurality of boxes, these boxes containing pouches, characterized in that the pouches are arranged flat in relation to the pallet.

According to one embodiment, the pouches are of the doypack type and are placed head-to-tail in the boxes.

According to another embodiment, the boxes have widths and lengths corresponding to dimensions, which are submultiples of 400 x 600 mm.

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According to a further embodiment, the boxes open at their top.

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According to another further embodiment, the boxes open at their side.

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According to one embodiment, the boxes are obtained by folding with a mandrel, the mandrel having the same width and length as the boxes.

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According to another embodiment, the pallet measures 800 x 1200 mm.

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According to a further embodiment, the pallet measures 1000 x 1200 mm.

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The invention also relates to a box containing pouches, having widths and lengths corresponding to dimensions which are submultiples of 400 x 600 mm, the pouches being arranged flat in the plane defining said widths and lengths.

According to one embodiment, the pouches are of the doypack type and are placed head-to-tail in the box.

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According to another embodiment, the box opens at the top.

According to a further embodiment, the box opens at the side.

According to another further embodiment, the box is obtained by folding with a mandrel, the mandrel having the same width and length as the box.

The invention also relates to a method of manufacturing a pallet according to the invention, comprising the following steps:

- (i) provision of boxes containing pouches;
- 5 (ii) orientation of said boxes in such a way as to have the pouches flat in relation to the pallet; and
- (iii) palletization of said boxes.

10 The invention also relates to a method of manufacturing a box according to the invention, comprising the following steps:

- (i) provision of an empty box having at least two dimensions corresponding to dimensions, which are submultiples of 400 x 600 mm;
- 15 (ii) filling of said box with pouches, the plane of the pouches corresponding to the plane defining said at least two dimensions; and
- (iii) closure of the box.

20 According to one embodiment, step (i) comprises a step of folding with the mandrel, the mandrel having the same at least two dimensions as the box.

25 According to another embodiment, step (ii) comprises inserting the pouches horizontally.

The invention also relates to a device for carrying out the method of manufacture according to the invention, comprising

- 30 (i) a conveyor belt delivering empty boxes, the boxes being arranged on the conveyor belt in a plane containing said at least two dimensions;
- (ii) at least one conveyor belt delivering pouches and arranged substantially perpendicular to the conveyor belt delivering empty boxes, said
- 35 pouches being arranged flat on said conveyor belt;
- (iii) an arm arranged above said conveyor belts and.

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- comprising a gripper device at its end, said arm alternating between a position for gripping the pouches and a position for filling the box; and
(iv) a device for closing the box.

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The invention also provides a packaging containing pouches, said pouches being placed head-to-tail in the packaging, the packaging being of the flexible type with four welded sides.

- 10 The pouches may be of the doypack type or of a flat uniform or pillow pouch type and be placed so as to be staggered.

According to one embodiment, the packaging has width and length corresponding to dimensions which are submultiples of
15 400 x 600 mm, the pouches being arranged flat in the plane defining the width and length.

The packaging may be of the top opening or side opening type. According to one embodiment, the packaging further comprises a
20 handle.

The packaging can further comprise a reclosing device.

The invention also provides a pallet comprising a plurality of
25 packagings according to the invention, characterized in that the pouches are arranged flat in relation to the pallet.

According to a further embodiment, the pallet measures 800 x 1200 mm.

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According to a further embodiment, the pallet measures 1000 x 1200 mm.

The invention also provides a method of manufacturing a packaging according to the invention, comprising the following
35 steps:

- (i) provision of an empty packaging (100) having four welded sides;

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- (ii) filling of said packaging with pouches; and
- (iii) closure of the packaging.

The invention will further provides a method of
5 manufacturing a packaging according to the invention,
comprising the steps of:

- (i) providing pouches in a mandrel;
- (ii) winding a film about said mandrel
- 10 (iii) welding said film to obtain four welded sides
(101a, 101b, 101c, 101d);
- (iv) withdrawing said mandrel; and
- (v) closing the packaging.

15 The invention finally relates to a method for
manufacturing a palette according to the invention, comprising
the steps of:

- (i) providing packagings containing pouches;
- (ii) orienting said packagings so that the pouches are
20 flat with respect to the palette; and
- (iii) palletizing said packagings.

The invention is now described in greater detail in the
following description and with reference to the attached
25 drawings, in which:

- Figure 1 shows a box according to a first embodiment of
the invention;
- Figures 2a and 2b show a pallet loading configuration;
- 30 - Figure 3 shows a cross section through a box according to
the invention;
- Figure 4 shows the web before being folded into the box
according to the first embodiment;
- Figure 5 shows a device for filling the box according to
35 the invention;
- Figure 6 shows a box according to a second embodiment of
the invention;

- Figure 7 shows the web before being folded into the box according to the second embodiment.
- Figure 8 shows a the packaging of the invention diagrammatically as well as the production method.

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Figure 1 depicts a package according to a first embodiment. The package is a cardboard box 1 containing a plurality of pouches 2a, 2b, 2c, etc. These are arranged horizontally in the box. The latter thus has a width and a length which are fixed by the characteristics of the pouch and therefore remain fixed irrespective of the number of pouches in the box. Alternatively, once the dimensions of the box have been chosen, it is possible to adapt those of the pouch. This box can therefore have dimensions "on the base" or on a pallet which are identical and which can in particular correspond to dimensions, which are submultiples of 400 x 600 mm. The dimensions are submultiples of 400 x 600 mm when they result from the division of the 400 x 600 mm rectangle. Thus, the following dimensions are submultiples: 300 x 400 mm (division by 2); 200 x 400 mm (division by 3); 200 x 300 mm (division by 4); 130 x 300 mm (division by 6); 200 x 200 mm (division by 6); 150 x 200 mm (division by 8); 100 x 300 mm (division by 8); 130 x 200 mm (division by 9); 130 x 150 mm (division by 12); 100 x 200 mm (division by 12); 100 x 150 mm (division by 16). These dimensions permit optimized stacking of the pallet in layers since it is always possible to reconstruct a base block measuring 400 x 600 mm. A pallet configuration is shown in Figures 2a and 2b which corresponds to 800 x 1200 mm and 1000 x 1200 mm respectively, with a "base module" of 400 x 600 mm.

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Such a box with pouches arranged flat when it is palletized therefore affords advantages in terms of palletization. As has been seen above, it is adapted to the two current standards. A variable number of pouches causes only the height of the box to vary, but not the layer or pallet base configuration which remains the same. A variation of the height of the box changes only the number of layers (which incidentally is already

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variable from one country to another, the maximum admissible heights of pallets varying from 2 m to 1.60 m). Automatic palletization is thus easy to implement because no control operation is any longer necessary, only the programming of the number of layers. The logistics are therefore improved.

The pouches situated in the box are of a conventional type. They can be of the uniformly flat type or preferably of the "doypack" type (namely a square pouch having a surface forming a base and allowing the pouch to stand upright). The pouches of the doypack type will be preferred. Referring to Figure 3, this shows a cross section through a package according to the invention. The doypack pouches are again labelled 2a, 2b, 2c, etc. They alternate in a head-to-tail arrangement. This permits better utilization of the available volume in the box. Indeed, the at least partial superpositioning of the doypack pouches makes it possible to increase the number of pouches per box (uniformly flat pouches losing a little useful volume at the four edges) and thus ultimately the number of pouches per pallet. The partial superpositioning of the pouches also permits adaptation of the box with respect to the length of the pouches, thus making it possible to allow for the characteristic dimensions of, for example, 130 x 200 mm (or any other submultiple of 400 x 600 mm close to the dimensions of the pouch in question). Such a doypack arrangement provides an interlocking effect.

The manufacture of the box is conventional; the box is obtained by folding a cardboard web 3, the layout of which is shown in Figure 4. The box 1 is formed by folding of a cardboard web 3. The latter has zones corresponding to the different parts of the box. The zone indicated by hatching is the zone which will be pushed firmly by the mandrel (not shown) into the corresponding cavity or impression (alternatively it is also possible to surround the mandrel with the web). This zone corresponds here to the base 11 of the box. It is flanked by two sides 12 and 13. The base 11 and

the sides 12 and 13 are provided with flaps 11a and 11b, 12a and 12b, 13a and 13b, respectively. These flaps are adhesively bonded to one another to form the box, the flaps 11a, 12a and 13a, on the one hand, and 11b, 12b and 13b, on the other, thus forming the third and fourth sides 14 and 15, respectively. The box is then filled with pouches by a suitable machine, the pouches being generally inserted flat. The lid 16 (attached before or after filling) is then closed. It is also possible to make the lid integral with the other faces of the box, in which case the lid 16 is in the continuation of one of the flaps 11a or 11b.

Figure 5 shows a device for filling the box according to the first embodiment. It comprises, for example, a conveyor belt 21 delivering empty boxes, and, perpendicularly, two conveyor belts 22 and 23 delivering pouches (arranged flat). According to a preferred variant, the pouches are placed the opposite way round on the conveyor belts in order to achieve a head-to-tail arrangement in the box. The device additionally comprises an arm 24 which rotates above the box and the pouches. The pouches are gripped, for example, with the aid of suction cups 25a and 25b arranged at the end of the arm. The arm thus alternately fills the box with pouches from one conveyor belt and then from the other conveyor belt. A device (not shown) for closing the box is also used in a conventional manner.

Figure 6 shows a package according to a second embodiment. The package is a cardboard box 1 containing a plurality of pouches 2a, 2b, 2c, etc. These are arranged horizontally in the box. In contrast to the first embodiment, the opening is via a face of the box. Alternatively, it is possible to turn the box a quarter of a turn in such a way that the opening is at the top, the pouches then being arranged vertically (it is this variant which is preferred for the second embodiment). The dimensions of the box remain given for the pouches being arranged flat. In the second embodiment, the box is used (preferred variant) in another sense than that for the

palletization, in contrast to the first embodiment. In the second embodiment, the pouches can have markings on their edge which makes it easier for consumers to identify them, particularly in the case of a multi-pack containing multiple varieties.

The manufacture of the box according to the second embodiment is conventional; the box is obtained by folding a cardboard web 4, the layout of which is shown in Figure 7. The box 1 is formed by folding a cardboard web 4. The latter has zones corresponding to the different parts of the box. The zone indicated by hatching is the zone which will be pushed firmly by the mandrel (not shown) into the corresponding cavity or impression. This zone corresponds here to the base 11 of the box. It is flanked by two sides 12 and 13, the latter also being flanked by the upper part 16. The base 11 and the side 13 and the top 16 are provided with flaps 11a and 11b, 13a and 13b, 16a and 16b, respectively. These flaps are adhesively bonded to one another to form the box, the flaps 11a, 13a and 16a, on the one hand, and 11b, 13b, and 16b, on the other, thus forming the third and fourth sides 14 and 15, respectively. The box is then filled with pouches by a suitable machine. The box is filled via the opening side (here 12), the pouches this time being introduced vertically (for example via the top, the box being turned). In this case, the opening side is closed after filling and not the top, as in the first embodiment.

The filling of these boxes according to the second embodiment is done as with the boxes according to the first embodiment, the device described with reference to Figure 5 also being adapted.

The cardboard box can be replaced by a box made of another rigid material, such as polymer materials. In the invention, "box" means any package that can be stacked on a (rigid) pallet. Generally, these boxes are of substantially

parallelepipedal shape. Other shapes distinct from a rectangle are also suitable, especially when they permit paving of the surface of the pallet. The boxes otherwise have the conventional characteristics of such secondary packages.

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The pouches can contain various types of products, in particular pastes, granules, liquids, which may or may not be foods. These products will preferably be moist food products. The pouches otherwise have the conventional characteristics of

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In another embodiment, the packaging is a flexible packaging with four welded sides. With this type of packaging, the rigidity comes about not through the material constituting the (rigid) box but rather from the side welds, together with the filling, with the pouches arranged head to tail. The pouches are for example of the doypack or flat type. They are preferably staggered so as to obtain the required dimensions as regards the length of the packaging, while preserving the same width.

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This embodiment is more particularly described in Figure 8. Here, the pouches 2a, 2b, etc can be seen which are to be introduced into a flexible packaging 100 with four welded sides 101a, 101b, 101c, 101d. The horizontal welds between the welds 101a and 101b and 101c and 101d respectively, allow the packaging to be closed at the top and bottom.

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The manufacturing method is illustrated in figure 8. In a first step, the pouches are presented and then introduced into the packaging 100. Once they have been introduced, two sides (generally the long sides) are folded and welded together. The formation of a handle 103 ensuring easy transport can also be a provided for.

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One can fill a packaging or bag which has already been welded and then close the top part (for example, at the handle), the

bottom part being preferably already welded before the pouches are introduced. The bag can also be welded directly onto the pouches: in this case a "prebox" in the form of a, preferably metal, mandrel is used with the pouches already in place.

5 Next, film is wound onto this mandrel (from a roll), after which the vertical (or longitudinal) welds are formed on the mandrel. The mandrel preferably has projections at the corners for facilitating welding.

10 The packaging is made from flexible film, which may be laminated or not, single-layer or multilayer. The film can be printed in a conventional manner. The film employed for producing a packaging as well as the production method for the packaging with four welded sides are further conventional.

15 The packaging can also include a side opening 102. This opening could also be on the top of the packaging or even on the bottom if appropriate. This opening can be obtained conventionally by providing cut-outs in the film. A re-closing
20 device can also be provided which, in a conventional manner, can be a tongue carrying a permanent adhesive.

Such a "flexible" packaging further offers advantages over the rigid box. Cost-savings are achieved compared to the use of
25 cardboard, notably by minimizing the amount of product needed for the packaging and the primary packagings. The amount of waste generated by the flexible packaging is less than the amount resulting from a rigid box and takes up less space for the consumer. The packaging allows films in modern materials
30 offering multiple technical possibilities to be used. Finally, the flexible packaging allows better positioning and looks better once placed on supermarket shelves.

The invention is not limited to the embodiments which have
35 been described, but instead is open to numerous variants easily accessible to the skilled person.